

What is claimed is:

1 *CW/AM* 1. A method for receiving a signal, said method comprising the steps  
2 of:

3 receiving an RF signal, said RF signal comprising a plurality of  
4 information channel signals, wherein each of said plurality of  
5 information channel signals are transmitted in one of a plurality of  
6 transmission bands; and each of said plurality of information channel  
7 signals is carried on one of a plurality of carrier frequencies;

8 down-converting said RF signal to form an intermediate signal,  
9 wherein said intermediate signal comprises down-converted versions  
10 of each of said plurality of information channel signals, and said  
11 down-converted versions of each of said plurality of information  
12 channel signals are within a common frequency spectrum; and  
13 decoding said intermediate signal to extract data from said down-  
14 converted versions of each of said plurality of information channel  
15 signals.

1 2. The method of claim 1, wherein said plurality of information channel  
signals each comprises different code division multiple access data.

1 3. The method of claim 2, wherein each of said plurality of information  
2 channel signals comprises data spread using at least one spreading code.

1 4. The method of claim 3, wherein each of said plurality of information  
2 channel signals is spread by different spreading codes.

1 *CW/AM* 5. The method of claim 1, wherein said step of down-converting  
2 comprises down-converting each one of said plurality of carrier frequencies by a  
3 plurality of oscillator frequencies.

1 6. The method of claim 5, wherein the frequency spacing between  
2 each adjacent pair of said plurality of carrier frequencies and between each  
3 adjacent pair of said oscillator frequencies is substantially the same.

1           7. The method of claim 1, wherein said common frequency spectrum  
2 comprises a first common frequency spectrum, and the step of decoding said  
3 intermediate signal comprises the step of forming a base band signal by down-  
4 converting said first common frequency spectrum to a second common frequency  
5 spectrum, said second common frequency spectrum lower in frequency than said  
6 first common frequency spectrum.

1           8. The method of claim 7, wherein the step of forming said base band  
2 signal further comprises down-converting the intermediate signal using a first  
3 oscillator signal to form a first base band component signal and a second  
4 oscillator signal to form a second base band component signal, the first and  
5 second oscillator signals each at a same frequency and a different phase.

1           9. The method of claim 8, wherein said first base band component  
2 comprises a first folded signal and said second base band component comprises  
3 a second folded signal, each folded signal having a frequency spectrum narrower  
4 than said first common frequency spectrum.

1           10. The method of claim 9 further comprising the steps of:

2                 sampling said first base band component to form a first digital  
3 representation;

4                 sampling said second base band component to form a second digital  
5 representation; and

6                 combining said first and said second digital representations to form  
7 an unfolded signal, said unfolded signal having a frequency  
8 spectrum greater than the spectrum of the first folded signal.

1           11. The method of claim 1, wherein the step of receiving an RF signal  
2 comprises receiving an RF signal from a cellular radio base station.

1           12. The method of claim 1, further comprising the step of filtering said  
2 intermediate signal to attenuate at least one signal outside the common frequency  
3 spectrum before performing said step of down-converting.

1           13. A mobile radio telephone unit comprising:

2                   an antenna configured to receive an RF signal, said RF signal  
3                   comprising a plurality of information channel signals, wherein each of  
4                   said plurality of information channel signals is transmitted in one of a  
5                   plurality of transmission bands, and each of said plurality of  
6                   information channel signals is carried on one of a plurality of carrier  
7                   frequencies;

8                   a down-converter operatively coupled to the antenna and configured  
9                   to down-convert said RF signal to form an intermediate signal,  
10                  wherein said intermediate signal comprises down-converted versions  
11                  of each of said plurality of information channel signals, and said  
12                  down-converted versions of each of said plurality of information  
13                  channel signals are within a common frequency spectrum;

14                  a decoder operatively coupled to the down-converter and configured  
15                  to decode said intermediate signal to extract data from said down-  
16                  converted versions of each of said plurality of information channel  
17                  signals.

1                  14. The apparatus of claim 13, wherein each of said plurality of  
2                  information channel signals comprises different code division multiple access  
3                  data, and each of said information channel signals comprises data spread using at  
4                  least one spreading code.

1                  15. The apparatus of claim 13, wherein said down-converter is  
2                  configured to down-convert each of said plurality of carrier frequencies by a  
3                  plurality of carrier frequencies having a lower frequency.

1                  16. The apparatus of claim 13, wherein said down-converter comprises  
2                  an oscillator for generating an oscillator signal comprising a plurality of oscillator  
3                  frequencies, the frequency spacing between each adjacent pair of said plurality of  
4                  carrier frequencies and between each adjacent pair of said plurality of oscillator  
5                  frequencies being substantially the same.

1           17. The apparatus of claim 15, wherein the decoder comprises a CDMA  
2           decoder configured to extract data from said down-converted version of each of  
3           said plurality of information channel signals using a different despreading code.

1           18. A signal reception apparatus comprising:

2           a down-converter configured to form an intermediate signal by down-  
3           converting an RF signal including a plurality of transmission bands to  
4           at least one intermediate band, said at least one intermediate band  
5           including at least one channel, wherein said down-converter down-  
6           converts by multiplying said RF signal by at least two frequencies;  
7           and

8           decoding circuitry coupled to the down-converter and configured to  
9           extract data from each at least one intermediate band, wherein the  
10          extracted data comprises data from each at least one channel  
11          included in each at least one intermediate band.

1           Sub A7  
12          19. The apparatus of claim 18, wherein each of the at least one  
13          channels of each at least one intermediate band comprises a different spread  
14          spectrum signal, and wherein the decoding circuitry comprises a spread spectrum  
15          decoder to extract data from the intermediate band using a spreading code  
16          associated with each at least one channel of each at least one intermediate band.

1           Sub A17  
12          20. A CDMA receiver for operating in at least a first mode and a second  
13          mode, said CDMA receiver comprising:

14           an initial RF stage, said initial RF stage for outputting a received RF  
15           signal;

16           an oscillator, said oscillator for generating a plurality of oscillator  
17           signals, each at a different frequency, when the receiver operates in  
18           the first mode and generating a single oscillator signal when the  
19           receiver operates in the second mode;

20           a down-converter coupled to said initial RF stage and said oscillator,  
21           said down-converter for receiving said received RF signal and

11                    multiplying said RF signal by said plurality of oscillator signals when  
12                    the receiver operates in the first mode, and multiplying said RF  
13                    signal by said single oscillator signal when the receiver operates in  
14                    the second mode, to generate an intermediate signal; and  
15                    a base band stage, coupled to said down-converter, said base band  
16                    stage for processing said intermediate signal.

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